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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/643,359

08/19/2003

Ning An

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EXAMINER

CAO, PHUONG THAO

ART UNIT

PAPER NUMBER

2164

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/643,359	<b>Applicant(s)</b> AN ET AL.	
	<b>Examiner</b> Phuong-Thao Cao	<b>Art Unit</b> 2164	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,4,6-12,14,15 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-12,14,15 and 18-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. This action is in response to Amendment filed on 03/03/2006.
  2. Claims 2, 5, 13, 16 and 17 have been cancelled and claims 18-20 have been added.
- Currently, claims 1, 3, 4, 6-12, 14, 15 and 18-20 are pending.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 4 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the subset" in line 1. There is insufficient antecedent basis for this limitation in the claim. It is unclear whether the limitation "the subset" refers to "the subsets of the index" or "a strict subset of the index" in claim 1.

Claim 19 recites the limitations "the subsets of the index" and "the inserted entries" in line 7. There is insufficient antecedent basis for these limitations in the claim.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 3, 4, 6-12, 14, 15 and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kothuri et al. (US Patent No 6,381,605).

As to claim 1, Kothuri et al. teach:

"A method of inserting a plurality of entries into an index keyed by multidimensional data" (see Abstract and [column 14, lines 55-65]) comprising:

“selecting subsets of the index that overlap if the entries are inserted into the subsets of the index” (see [column 15, lines 55-60] wherein branch or subtree is equivalent to Applicant’s “subsets of index”);

“inserting the entries within the subsets of the index” (see [column 15, lines ] for the disclosure of inserting data item into leaf nodes of the selected subtrees, wherein “data item” is equivalent to Applicant’s “entries” and “leaf nodes of the selected subtree” is equivalent to Applicant’s “within the subsets of the index”);

“reorganizing the subsets of the index with the inserted entries, wherein said reorganizing includes reorganizing such that an amount of overlap of bounding boxes for objects in a strict subset of the index is reduced” (see [column 15, lines 60-67] and [column 16, lines 1-10] wherein the process of splitting node is equivalent to reorganizing the subsets of the index with the inserted entries as illustrated in Applicant’s claim language).

As to claim 3, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

Kothuri et al. teach:

“the entries include spatial data” (see [column 5, lines 40-42]); and

“the index keyed by multidimensional data includes a spatial index” (see [column 6, lines 30-40] and [column 7, lines 1-30] wherein R-tree index is a spatial index).

As to claim 4, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

Kothuri et al. teach:

“wherein the subset include sibling nodes of an R-tree index” (see [column 15, line 53-63] for the disclosure of selected subtree has children leaf nodes wherein subtree is equivalent to Applicant’s “subset” and children leaf nodes is equivalent to Applicant’s “sibling nodes”).

As to claim 6, Kothuri et al. teach:

“A method of inserting a plurality of entries into a spatial index” (see [column 15, lines 37-50]), comprising:

“selecting at least two and less than all children of a node in the spatial index, wherein the selected children include objects distributed within” (see [column 15, lines 55-67] wherein children leaf nodes whose MBAs overlap of the node at the root of a selected subtree are equivalent to Applicant’s “selecting at least two and less than all children of a node”);

“distributing the entries within the selected children” (see [column 15, lines 37-40 and 60-65] and [column 16, lines 1-10]); and

“reorganizing the objects distributed within the selected children” (see [column 15, lines 35-40] and [column 16, lines 1-10] wherein the process of splitting node and dividing the entries as disclosed is equivalent to Applicant’s “reorganizing” and entries are equivalent to Applicant’s “objects”).

As to claim 7, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected including the following:

Kothuri et al. teach:

“wherein said reorganizing includes reorganizing such that an amount of overlap of bounding boxes for objects in the spatial index is reduced” (see [column 16, lines 1-10] wherein the process of splitting node and dividing the entries or data items as disclosed is equivalent to Applicant’s “reorganizing” and overlap between the nodes’ MBAs is equivalent to Applicant’s “overlap of bounding boxes for objects”).

As to claim 8, this claim is rejected based on arguments given above for rejected claim 7 and is similarly rejected including the following:

Kothuri et al. teach:

“wherein one of the bounding boxes includes a minimum bounding rectangle (MBR) (see Fig 7A and [column 7, lines 1-5] wherein MBA is equivalent to Applicant’s “MBR”).

As to claim 9, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected including the following:

Kothuri et al. teach:

“wherein at least two of the selected children have respective bounding boxes that overlap with one another” (see [column 15, lines 58-62] wherein children leaf nodes (belonging to the selected subtree) whose MBAs overlap is equivalent to Applicant’s claim language).

As to claim 10, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected including the following:

Kothuri et al. teach:

“wherein said selecting includes selecting exactly two of the children” (see [column 16, lines 1-10] where node is split into two nodes which is equivalent to Applicant’s “two of the children” and these two nodes are selected for dividing the entries).

As to claim 11, this claim is rejected based on arguments given above for rejected claim 10 and is similarly rejected including the following:

Kothuri et al. teach:

“wherein the exactly two of the children having respective bounding boxes that overlap with one another” (see [column 16, lines 1-10] wherein two nodes of the splitting equivalent to Applicant’s “two of the children”).

As to claim 12, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected including the following:

Kothuri et al. teach:

“Wherein the objects distributed among the selected children include entries” (see [column 16, lines 1-10]).

As to claim 14, Kothuri et al. teach:

“A method of inserting a plurality of entries into a multidimensional keyed index organized as an R-Tree” (see [column 14, lines 33-45]), comprising:



“associating a node in the R-tree with a buddy node that is a sibling of the node” (see [column 14, lines 50-52] wherein clustering the data items implies associating a node in the R-tree with a buddy node as illustrated in Applicant’s claim language);

“clustering children of the node and the children of the buddy” (see [column 14, lines 45-55] wherein clustering data items is equivalent to Applicant’s “clustering children of the node and children of the buddy”);

“partitioning the clustered children and the entries into a plurality of groups, wherein a least one of the groups includes a child node of the cluster node, a buddy child node associated with child node, and one or more of the entries, said partition is performed so that overlap among bounding boxes associated with the groups is reduced” (see [column 15, lines 8-40] and [column 16, lines 1-10]); and

“inserting said one or more of the entries among the child node and the buddy child node associated the child node” (see [column 16, lines 1-15] wherein the old leaf node is equivalent to Applicant’s “child node” and new leaf node is equivalent to Applicant’s “buddy child node associated with child node”).

As to claim 15, this claim is rejected based on arguments given above for rejected claim 14 and is similarly rejected including the following:

Kothuri et al. teach:

“each node of the R-tree is associated with a respective bounding box” (see [column 7, lines 1-10]); and

“a first bounding box associated with the child node overlaps a second bounding box associated with the buddy child node” (see Fig 1 wherein bounding box B1 associated with node 161 overlaps bounding box B2 associated with the buddy child node 162, as illustrated in Applicant’s claim language).

As to claim 18, Kothuri et al. teach:

“A tangible computer-readable medium bearing instruction for inserting a plurality of entries into an index keyed by multidimensional data” (see Abstract and [column 14, lines 55-65]) said instructions arranged, upon execution by at least one processor, to perform the steps of:

“selecting subsets of the index that overlap if the entries are inserted into the subsets of the index” (see [column 15, lines 55-60] wherein branch or subtree is equivalent to Applicant’s “subsets of index”);

“inserting the entries within the subsets of the index” (see [column 15, lines ] for the disclosure of inserting data item into leaf nodes of the selected subtrees, wherein “data item” is equivalent to Applicant’s “entries” and “leaf nodes of the selected subtree” is equivalent to Applicant’s “within the subsets of the index”);

“reorganizing the subsets of the index with the inserted entries, wherein said reorganizing includes reorganizing such that an amount of overlap of bounding boxes for objects in a strict subset of the index is reduced” (see [column 15, lines 60-67] and [column 16, lines 1-10] wherein the process of splitting node is equivalent to reorganizing the subsets of the index with the inserted entries as illustrated in Applicant’s claim language).

As to claim 19, Kothuri et al. teach:

“A tangible computer-readable medium bearing instructions for inserting a plurality of entries into a spatial index”(see [column 15, lines 37-50]), said instruction arranged, upon execution by at least one processor, to perform the steps of:

“selecting at least two and less than all children of a node in the spatial index, wherein the selected children include objects distributed within” (see [column 15, lines 55-67] wherein children leaf nodes whose MBAs overlap of the node at the root of a selected subtree are equivalent to Applicant’s “selecting at least two and less than all children of a node”);

“distributing the entries within the selected children” (see [column 15, lines 37-40 and 60-65] and [column 16, lines 1-10]); and

“reorganizing the subsets of the index with the inserted entries, wherein said reorganizing includes reorganizing such that an amount of overlap of bounding boxes for objects in a strict subset of the index is reduced” (see [column 15, lines 60-67] and [column 16, lines 1-10] wherein the process of splitting node is equivalent to reorganizing the subsets of the index with the inserted entries as illustrated in Applicant’s claim language).

As to claim 20, Kothuri et al. teach:

“A tangible computer-readable medium bearing instructions for inserting a plurality of entries into a multidimensional keyed index organized as an R-Tree” (see [column 14, lines 33-45]), said instructions arranged, upon execution by at least one processor, to perform the steps of:

“associating a node in the R-tree with a buddy node that is a sibling of the node” (see [column 14, lines 50-52] wherein clustering the data items implies associating a node in the R-tree with a buddy node as illustrated in Applicant’s claim language);

“clustering children of the node and the children of the buddy” (see [column 14, lines 45-55] wherein clustering data items is equivalent to Applicant’s “clustering children of the node and children of the buddy”);

“partitioning the clustered children and the entries into a plurality of groups, wherein a least one of the groups includes a child node of the cluster node, a buddy child node associated with child node, and one or more of the entries, said partition is performed so that overlap among bounding boxes associated with the groups is reduced” (see Fig. 3, [column 15, lines 8-40] and [column 16, lines 1-10]); and

“inserting said one or more of the entries among the child node and the buddy child node associated the child node” (see [column 16, lines 1-15] wherein the old leaf node is equivalent to Applicant’s “child node” and new leaf node is equivalent to Applicant’s “buddy child node associated with child node”).

***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong-Thao Cao whose telephone number is (571) 272-2735. The examiner can normally be reached on 8:30 AM - 5:00 PM (Mon - Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PTC

April 24, 2006

  
Primary Examiner  
Art Unit 2167